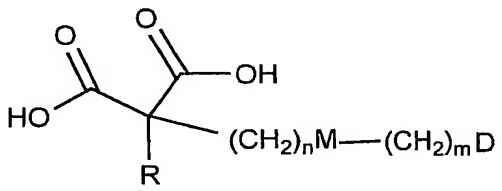
What is claimed is:

1. A method for selective targeting a compound to a cell undergoing *p*erturbation of the *n*ormal *o*rganization of its plasma *m*embrane (PNOM-cell), comprising the steps of:

contacting a cell population comprising said PNOM-cell with a compound or a conjugate comprising said compound wherein said compound is represented by the structure set forth in formula (I):



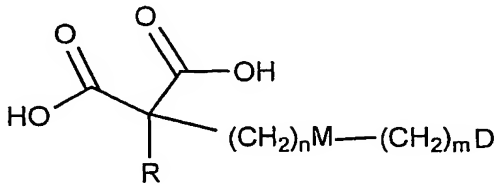
(I)

or pharmaceutically acceptable salts, metal chelates, solvates and hydrates of the compound represented by the structure as set forth in formula (I), and solvates and hydrates of said salts; wherein, R represents hydrogen, C_1, C_2, C_3, C_4, C_5, C_6, C_7, C_8, C_9, C_{10}, C_{11}, C_{12}, C_{13}, C_{14} linear or branched alkyl, linear or branched hydroxy-alkyl, linear or branched fluoro-alkyl, one or two-ring aryl or heteroaryl, or combinations thereof; n and m each stands for an integer of 0, 1, 2, 3 or 4, n and m can be the same or different; M is selected from null, -O-, -S-, -C(O)NH-, and –N(U)-, wherein U stands for a null, hydrogen, C_1, C_2, C_3, or C_4 alkyl, or C_1, C_2, C_3, or C_4 alkylene; D is selected from hydrogen, a drug to be targeted to a cell manifesting *p*erturbations and alterations of the *n*ormal *o*rganization of the cell plasma *m*embrane (PNOM-cell) and a marker for diagnostics selected from a marker for imaging and a metal chelate; the marker for imaging may be detected by color, fluorescence, x-ray, CT scan, magnetic resonance imaging (MRI) or radio-isotope scan such as single photon emission tomography (SPECT) or positron emission tomography (PET); wherein the

above alkylene groups bound to M or D, or the aryl or heteroaryl of R may each be substituted at each occurrence by a group selected from amino, F, NO_2, OH and SH; thereby selectively targeting said compound to said PNOM-cell within said cell population.

2. A method of detecting a PNOM-cell within a cell population, said method comprising:

(i) contacting the cell population with a compound or a conjugate comprising said compound wherein said compound is represented by the structure set forth in formula (I):



(I)

or pharmaceutically acceptable salts, metal chelates, solvates and hydrates of the compound represented by the structure as set forth in formula (I), and solvates and hydrates of said salts; wherein,

R represents hydrogen, C_1, C_2, C_3, C_4, C_5, C_6, C_7, C_8, C_9, C_{10}, C_{11}, C_{12}, C_{13}, C_{14} linear or branched alkyl, linear or branched hydroxy-alkyl, linear or branched fluoro-alkyl, one or two-ring aryl or heteroaryl, or combinations thereof

n and m each stands for an integer of 0, 1, 2, 3 or 4; n and m can be the same or different;

M is selected from null, -O-, -S-, -C(O)NH-, and –N(U), wherein U stands for a null, hydrogen, C_1, C_2, C_3, or C_4 alkyl, ;

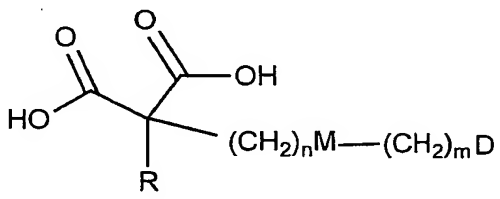
D is a marker for diagnostics selected from a marker for imaging or a labeled metal chelate; said marker for imaging being selected from the group comprising a fluorescent label, a radio-label, a marker for X-ray, a marker for MRI, a marker for

PET scan and a label capable of undergoing an enzymatic reaction that produces a detectable color; and where the above alkylene groups in formula (I) bound to M or D may be each substituted at each occurrence by a group selected from amino, F, OH and SH; and

(ii) determining the amount of said compound bound to said cells, wherein a significant amount of said compound bound to a cell indicates its being a PNOM-cell.

3. A method for detecting of PNOM-cells in a patient or an animal, comprising:

(i). administering a compound or a conjugate comprising said compound wherein said compound is represented by the structure set forth in formula (I):



(I)

or pharmaceutically acceptable salts, metal chelates, solvates and hydrates of the compound represented by the structure as set forth in formula (I), and solvates and hydrates of said salts; wherein,

R represents hydrogen, C_1, C_2, C_3, C_4, C_5, C_6, C_7, C_8, C_9, C_{10}, C_{11}, C_{12}, C_{13}, C_{14} linear or branched alkyl, linear or branched hydroxy-alkyl, linear or branched fluoro-alkyl, one or two-ring aryl or heteroaryl, or combinations thereof;

n and m each stands for an integer of 0, 1, 2, 3 or 4; n and m can be the same or different ;

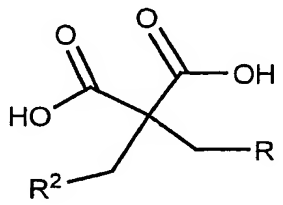
M is selected from null, -O-, -S-, -C(O)NH-, and –N(U), wherein U stands for a null, hydrogen, C_1, C_2, C_3, or C_4 alkyl;

D is a marker for diagnostics selected from a marker for imaging and a labeled metal chelate; said marker for imaging being selected from the group comprising a fluorescent label, a radio-label, a marker for X-ray, a marker for MRI, a marker for PET scan and a label capable of undergoing an enzymatic reaction that produces a detectable color; where the above alkylene groups in formula (I) bound to M or D may be each substituted at each occurrence by a group selected from amino, F, OH and SH; and

(ii) imaging the human or animal, so as determine the amount of said compound bound to cells, wherein a significant amount of said compound bound a cell indicates its being a PNOM-cell.

4. A method for selective targeting of a compound to a cell undergoing ***p***erturbation of the ***no***rmal ***o***rganization of its plasma ***m***embrane (PNOM-cell), comprising the steps of:

(i). contacting a cell population comprising said PNOM-cell with a compound or a conjugate comprising said compound wherein said compound is represented by the structure as set forth in formula (II):



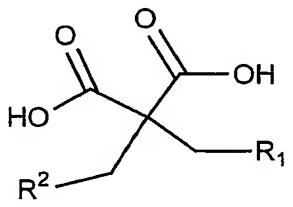
II

including pharmaceutically acceptable salts hydrates, solvates and metal chelates of the compound represented by the structure as set forth in formula (II) and solvates and hydrates of said salts; wherein R^1 is hydrogen or C_1, C_2, C_3, C_4, C_5 or C_6 linear or branched alkyl, and R^2 is hydrogen or C_1, C_2, C_3, C_4, C_5 or C_6 linear or branched alkyl, hydroxy-alkyl or fluoro-alkyl;

(ii). thereby selectively targeting said compound to said PNOM-cell within said cell population.

5. A method of detecting a PNOM-cell within a cell population, said method comprising:

(i) contacting the cell population with a compound or a conjugate comprising said compound wherein said compound is represented by the structure as set forth in formula (II):



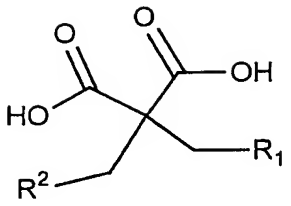
II

including pharmaceutically acceptable salts hydrates, solvates and metal chelates of the compound represented by the structure as set forth in formula (II) and solvates and hydrates of said salts; wherein R^1 is hydrogen or C_1, C_2, C_3, C_4, C_5 or C_6 linear or branched alkyl, and R^2 is hydrogen or C_1, C_2, C_3, C_4, C_5 or C_6 linear or branched alkyl, hydroxy-alkyl or fluoro-alkyl; and

(ii) determining the amount of said compound bound to said cells, wherein a significant amount of said compound bound to a cell indicates its being a PNOM-cell.

6. A method for detecting of PNOM-cells in a patient or an animal, comprising:

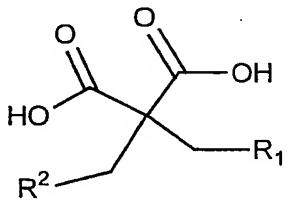
(i). administering a compound or a conjugate comprising said compound wherein said compound is represented by the structure as set forth in formula (II):



II

including pharmaceutically acceptable salts hydrates, solvates and metal chelates of the compound represented by the structure as set forth in formula (II) and solvates and hydrates of said salts; wherein R^1 is hydrogen or C_1, C_2, C_3, C_4, C_5 or C_6 linear or branched alkyl, and R^2 is hydrogen or C_1, C_2, C_3, C_4, C_5 or C_6 linear or branched alkyl, hydroxy-alkyl or fluoro-alkyl; and (ii) imaging the human or animal, so as determine the amount of said compound bound to cells, wherein a significant amount of said compound bound a cell indicates its being a PNOM-cell.

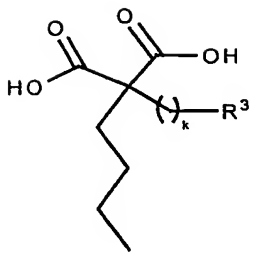
7. A compound represented by the structure as set forth in formula (II):



II

including pharmaceutically acceptable salts hydrates, solvates and metal chelates of the compound represented by the structure as set forth in formula (II) and solvates and hydrates of said salts; wherein R^1 is hydrogen or C_1, C_2, C_3, C_4, C_5 or C_6 linear or branched alkyl, and R^2 is a C_1, C_2, C_3, C_4, C_5 or C_6 fluoro-alkyl.

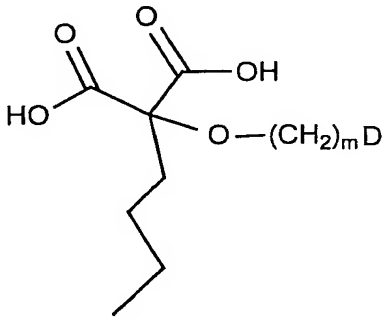
8. A compound represented by the structure as set forth in formula (III):



III

including pharmaceutically acceptable salts hydrates, solvates and metal chelates of the compound represented by the structure as set forth in formula (II) and solvates and hydrates of said salts; wherein R^3 is hydroxyl or F and k is an integer selected from 1, 2, 3, 4 and 5.

9. A compound represented by the structure as set forth in formula (IV):

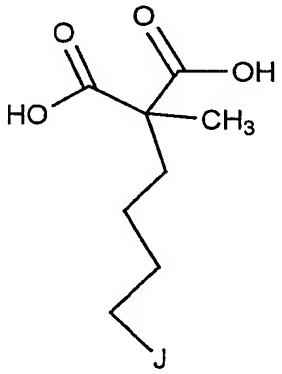


IV

including pharmaceutically acceptable salts hydrates, solvates and metal chelates of the compound represented by the structure as set forth in formula (IV) and solvates and hydrates of said salts; wherein m stands for an integer of 0, 1, 2, 3 or 4; and D is selected from hydrogen; a drug to be targeted to a cell undergoing *p*erturbation of the *n*ormal *o*rganization of its plasma *m*embrane (PNOM-cell); and a marker for diagnostics selected from a marker for imaging and a metal chelate; said marker for imaging being selected from the group comprising a fluorescent label, a radio-label,

a marker for X-ray, a marker for MRI, a marker for PET scan and a label capable of undergoing an enzymatic reaction that produces a detectable color.

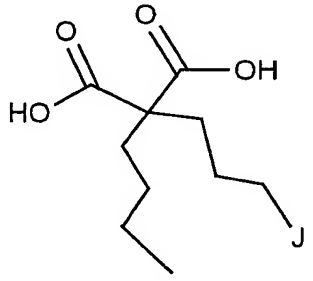
10. A compound according to claim 7 represented by the structure as set forth in formula (V):



V

including pharmaceutically acceptable salts hydrates, solvates and metal chelates of the compound represented by the structure as set forth in formula (V) and solvates and hydrates of said salts; wherein J is selected from F and –OH.

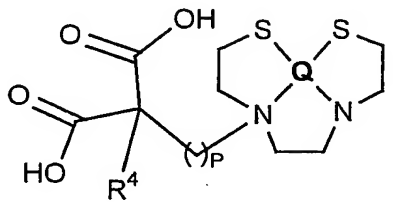
11. A compound according to claim 7 represented by the structure as set forth in formula (VI):



VI

including pharmaceutically acceptable salts hydrates, solvates and metal chelates of the compound represented by the structure as set forth in formula (VI) and solvates and hydrates of said salts; wherein J is selected from hydrogen, F and –OH.

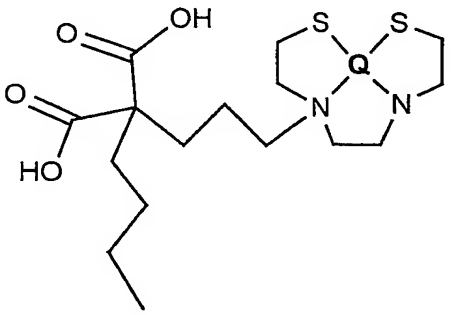
12. A compound represented by the structure set forth in formula VII:



VII

including pharmaceutically acceptable salts hydrates, solvates and metal chelates of the compound represented by the structure as set forth in formula (VII) and solvates and hydrates of said salts, wherein Q is selected from Technetium, oxo-Technetium, Rhenium and oxo-Rhenium, R^4 is selected from hydrogen, C_1, C_2, C_3, C_4, C_5, and C_6 linear or branched alkyl, and p stands for an integer, selected from 1, 2, 3, 4 and 5.

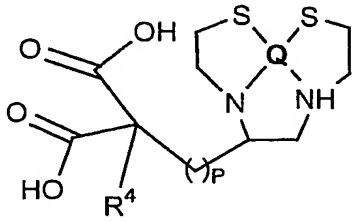
13. A compound according to claim 12 represented by the structure set forth in formula VIII:



VIII

including pharmaceutically acceptable salts hydrates, solvates and metal chelates of the compound represented by the structure as set forth in formula (VIII) and solvates and hydrates of said salts, wherein Q is selected from Technetium, oxo-Technetium, Rhenium and oxo-Rhenium.

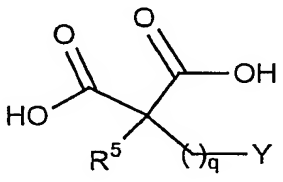
14. A compound represented by the structure set forth in formula IX:



IX

including pharmaceutically acceptable salts hydrates, solvates and metal chelates of the compound represented by the structure as set forth in formula (IX) and solvates and hydrates of said salts, wherein Q is selected from Technetium, oxo-Technetium, Rhenium and oxo-Rhenium, R^4 is selected from hydrogen, C_1, C_2, C_3, C_4, C_5, and C_6 linear or branched alkyl, and p stands for an integer, selected from 1, 2, 3, 4 and 5.

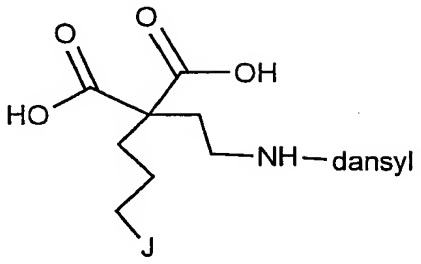
15. A compound represented by the structure as set forth in formula (X):



X

including pharmaceutically acceptable salts hydrates, solvates and metal chelates of the compound represented by the structure as set forth in formula (X) and solvates and hydrates of said salts; wherein R^5 is selected from hydrogen, C_1, C_2, C_3, C_4, C_5, and C_6 linear or branched alkyl, C_1, C_2, C_3, C_4, C_5, and C_6 linear or branched fluoro-alkyl, and C_1, C_2, C_3, C_4, C_5, and C_6 linear or branched hydroxy-alkyl; and q stands for an integer, selected from 1, 2, 3, 4 and 5.

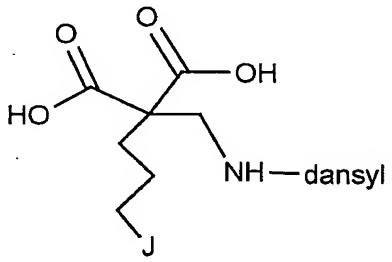
16. A compound according to claim 15 represented by the structure as set forth in formula (XI):



XI

including pharmaceutically acceptable salts hydrates, solvates and metal chelates of the compound represented by the structure as set forth in formula (XI) and solvates and hydrates of said salts; wherein J is selected from hydrogen, methyl, -F and –OH.

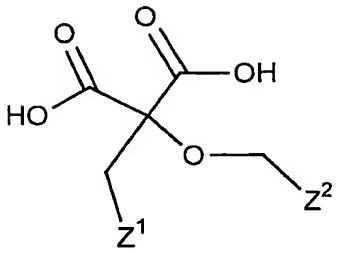
17. A compound according to claim 15 represented by the structure as set forth in formula (XII):



XII

including pharmaceutically acceptable salts hydrates, solvates and metal chelates of the compound represented by the structure as set forth in formula (XII) and solvates and hydrates of said salts; wherein J is selected from hydrogen, methyl, -F and –OH.

18. A compound represented by the structure as set forth in formula (XIII):



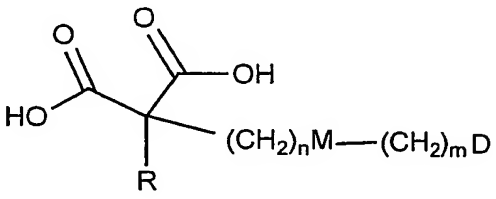
XIII

including pharmaceutically acceptable salts hydrates, solvates and metal chelates of the compound represented by the structure as set forth in formula (XIII) and solvates and hydrates of said salts; wherein Z^1 and Z^2 are each selected from hydrogen and C_1, C_2, C_3, C_4, C_5 alkyl, hydroxy-alkyl or fluoro-alkyl; Z groups may be the same or different.

19. A compound according to the structure set forth in formulae I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XII or XIII, comprising or being linked to a marker for imaging, wherein said marker for imaging is Tc, Tc=O, In, Cu, Ga, Xe, Tl, Re and Re=O , ^{123}I , ^{131}I , Gd(III), Fe(III), Fe_2O_3, Fe_3O_4, Mn(II) ^{18}F, ^{15}O, ^{18}O, ^{11}C, ^{13}C, ^{124}I, ^{13}N, ^{75}Br, Tc-99m or In-111.

20. A method of detecting a PNOM-cell in the brain of an examined subject, said method comprising:

(i) administering a compound or a conjugate to the examined subject comprising said compound wherein said compound is represented by the structure set forth in formula (I):



(I)

or pharmaceutically acceptable salts, metal chelates, solvates and hydrates of the compound represented by the structure as set forth in formula (I), and solvates and hydrates of said salts; wherein,

R represents hydrogen, C_1, C_2, C_3, C_4, C_5, C_6, C_7, C_8, C_9, C_{10}, C_{11}, C_{12}, C_{13}, C_{14} linear or branched alkyl, linear or branched hydroxy-alkyl; or linear or branched fluoro-alkyl, one or two-ring aryl or heteroaryl, or combinations thereof;

n and m each stands for an integer of 0, 1, 2, 3 or 4; n and m can be the same or different ;

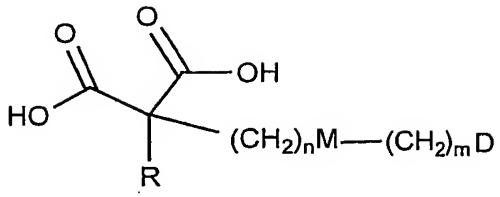
M is selected from null, -O-, -S-, -C(O)NH-, and –N(U), wherein U stands for a null, hydrogen, C_1, C_2, C_3, or C_4 alkyl, ;

D is a marker for diagnostics selected from a marker for imaging or a labeled metal chelate; said marker for imaging being selected from the group comprising a fluorescent label, a radio-label, a marker for X-ray, a marker for MRI, a marker for PET scan and a label capable of undergoing an enzymatic reaction that produces a detectable color; and where the above alkylene groups in formula (I) bound to M or D may be each substituted at each occurrence by a group selected from amino, F, OH and SH; and

(ii) determining the amount of said compound bound to cells in the brain, wherein a significant amount of said compound bound to a cell indicates its being a PNOM-cell.

21. A method of detecting apoptotic cells within a tumor in a suspected body area of an examined subject, said method comprising:

(i) administering a compound or a conjugate to the examined subject comprising said compound wherein said compound is represented by the structure set forth in formula (I):



(I)

or pharmaceutically acceptable salts, metal chelates, solvates and hydrates of the compound represented by the structure as set forth in formula (I), and solvates and hydrates of said salts; wherein,

R represents hydrogen, C_1, C_2, C_3, C_4, C_5, C_6, C_7, C_8, C_9, C_{10}, C_{11}, C_{12}, C_{13}, C_{14} linear or branched alkyl, linear or branched hydroxy-alkyl; or linear or branched fluoro-alkyl, one or two-ring aryl or heteroaryl, or combinations thereof;

n and m each stands for an integer of 0, 1, 2, 3 or 4; n and m can be the same or different ;

M is selected from null, -O-, -S-, -C(O)NH-, and –N(U), wherein U stands for a null, hydrogen, C_1, C_2, C_3, or C_4 alkyl;

D is a marker for diagnostics selected from a marker for imaging or a labeled metal chelate; said marker for imaging being selected from the group comprising a fluorescent label, a radio-label, a marker for X-ray, a marker for MRI, a marker for PET scan and a label capable of undergoing an enzymatic reaction that produces a detectable color; and where the above alkylene groups in formula (I) bound to M or D may be each substituted at each occurrence by a group selected from amino, F, OH and SH; and

(ii) determining the amount of said compound bound to cells in the tumor or in the organ comprising the tumor, wherein a significant amount of said compound bound to cells in a suspected area indicates that these tumor cells are undergoing apoptosis.

22. A method of targeting anticancer drugs to a tumor which has foci of apoptotic cells, said method comprising the step of administering a compound as set forth in any of the formulae I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XII, and XIII which either comprises a cytotoxic drug or is being linked to a cytotoxic drug, thereby achieving targeting of said drugs to the foci of cell death within the tumor.

23. A method of targeting an anticoagulant or a fibrinolytic agent to a blood clot, comprising the step of administering a compound as set forth in any of the formulae I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XII, and XIII which either comprises said anticoagulant or fibrinolytic agent, thereby achieving targeting of said drugs to the blood clot.